DELAWARE TOXICS RELEASE INVENTORY

DATA SUMMARY

2010

Prepared by the
Department of Natural Resources and Environmental Control
Division of Waste and Hazardous Substances

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2010 TRI DATA SUMMARY

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Front Cover: *This is a picture of the Delaware City Refinery. Idle in 2010, because of a change in ownership, it is now restarting and is expected to be in full production by the end of 2011.*

DNREC Photo.

A MESSAGE FROM THE SECRETARY

As the TRI program celebrates its 24th year of reporting to the public, we are pleased to present the Delaware TRI report which includes valuable data about toxic chemical releases and other waste management. I am particularly pleased that the results of Delaware's efforts to move its source of energy generation from coal to cleaner forms of energy are reflected in this year's TRI report. The Calpine Edge Moor/Hay Road Power Plant converted from coal to natural gas in July 2010 and the Invista Seaford facility converted to natural gas in April 2009. This has significantly reduced releases of acid gasses and other chemicals related to the combustion of coal, and is benefiting Delaware's environment now. These two facilities contributed 170 tons toward the reduced on-site releases in 2010, and Invista contributed another 147 tons in 2009.

Also of note is that for the first time since Delaware began reporting toxic chemical releases, the amount of toxic chemicals released in 2010 is lower than 1990. When considering that 20 chemicals reportable in Delaware were added since 1995 and 9 facilities, including the electric generating facilities, were added in 1998, this is quite an achievement. And while part of this is due to Delaware's and industries' efforts to reduce releases and find less toxic alternatives, unfortunately it is also partially due to the downturn in the economy and facility closures. The majority of the Delaware City Refinery was idled during 2010, but came back on-line in 2011, bringing with it both jobs and a commitment for environmental improvements at the facility.

Generally, on-site releases of toxic chemicals were lower for 2010 than for 2009. On-site releases were 19% lower and on-site waste management was down by 31%, but transfers off-site for treatment or disposal were up 18%. Releases of mercury, carcinogens, and dioxins also continue to decline; mercury was down 24% for 2010, carcinogens were down 13%, and dioxins were down 14%.

Continued reduction in toxic releases equates with making Delaware cleaner and safer environmentally. Any operating facilities that take voluntary action to cut down on their releases also deserve recognition for their contributions to the goal of reducing all toxic emissions in Delaware. Additional reductions will come through full compliance with DNREC's multi-pollutant regulation (Reg. 1146), a two-phase regulation designed to sharply reduce emissions from Delaware power plants. One example of moving toward compliance is NRG's Indian River power plant, now close to completing a major upgrade to its Unit 4 coal-powered generator. When complete, the generator upgrade permitted by DNREC in 2009 can be expected to achieve reductions of more than 75 percent for nitrogen oxides (NOx), nearly 85 percent for sulfur dioxide (SO_2) and almost 90 percent for mercury.

I urge you to take advantage of the information in this report and of the many other resources available to you to obtain information on the management of chemicals in and around your community. I also encourage our industrial citizens to continue to reduce releases of pollutants.

Sincerely,

Collin P. O'Mara, Secretary,
Department of Natural Resources and Environmental Control

INTRODUCTION

Chemicals are a part of our lives. We use chemicals in our homes, our cars, our schools, and our industries. Chemicals are used to make many things, including electricity, fuel, and consumer products, which we use, enjoy, and depend on each day.

Delaware citizens and all Americans also have a right to air that is clean, water that is safe to drink, food that is free from dangerous contaminants, and communities that are free of hazardous wastes.

In 1986, Congress created the Toxics Release Inventory (TRI) as part of the Superfund Amendments and Reauthorization Act (SARA) to ensure that toxic chemicals and their wastes are managed and used safely and responsibly by the manufacturing industries and other facilities, and to let the communities in which these facilities are located know about the disposal and waste management of these chemicals.

Recognizing the value of information and the power the public can apply through the use of the "Right-to-Know" concept, Delaware and DNREC joined with the EPA and first reported on releases and other waste management of toxic chemicals in Delaware for 1987. DNREC and the EPA continue to collect and distribute TRI data to the public each year. The fact that companies must report on the amount of toxic chemicals they release into the environment has, by itself, caused significant reductions in reported TRI environmental releases over the years.

This report provides a summary of the release and waste management of toxic chemicals by Delaware facilities in 2010. DNREC also publishes a second, more detailed TRI report that provides information about each TRI chemical reported by each facility in Delaware.

For 2010, portions of the Delaware City Refinery were idle and the facility reported much lower releases and waste management compared to 2009. These changes, in connection with the normal year-to-year changes reported by other facilities, resulted in an overall decrease of 991,000 pounds (19%) in the total amount of state-wide on-site releases for 2010. Total releases and other waste management activities reported to TRI were lower by 23%. We hope that, with the help of industry and interested citizens, reductions in the amounts of on-site releases of TRI chemicals will continue.

The on-site release trend for persistent bioaccumulative toxins (PBTs) was down by 11,000 pounds or 55%, and the trend for cancer-causing chemicals (carcinogens) was down by 24,000 pounds, or 13% for 2010.

Delaware's Department of Natural Resources and Environmental Control (DNREC) hopes that the information presented in this report will benefit Delaware citizens by improving their awareness and promoting their involvement in environmental issues in their communities.

WHAT IS THE TOXICS RELEAESE INVENTORY?

The **Toxics Release Inventory**, or **TRI**, is a collection of data that contains information about toxic chemicals that are manufactured or used by some, but definitely not all, facilities in the United States. See the next page for details on who must report to the TRI program. This information is reported each year by the facilities to the states where they are located and to the U.S. Environmental Protection Agency (EPA). This information is made available to the public through this report and a more technical report published by Delaware's Department of Natural Resources and Environmental Control (DNREC). In addition, the EPA publishes TRI reports, and the data is available through state and federal internet sites. The TRI program was established in 1986 to provide information to the public about the presence and release of toxic chemicals in their communities. It is part of the Emergency Planning and Community Right-to-Know Act (EPCRA).

The EPCRA Reporting Programs at EPA and DNREC maintain databases that are updated as new reports are received. The databases currently contain 24 years of data. Most chemical releases reported under TRI are also regulated through Federal and/or State permits.

This report is a summary of the 2010 TRI data and revisions received as of October 1, 2011 from Delaware facilities.

WHY IS THERE A NEED FOR THIS PROGRAM?

A dramatic and fatal accident involving the release of a large quantity of methyl isocyanate gas occurred in Bhopal, India on December 3, 1984. Because of this release and similar, less tragic, accidents that occurred in the United States, Congress enacted the Emergency Planning and Community Right to Know Act (EPCRA). The purpose of this Act is to give citizens information about the chemicals present in their communities, and to improve the ability of facilities and local emergency agencies to plan for and respond to chemical emergencies. The Act established a number of reporting requirements for facilities and businesses, and reporting began in 1987. In 1991, Delaware established its own EPCRA legislation that enhanced the federal requirements.

WHAT IS A TOXIC CHEMICAL?

A toxic chemical is one that meets any one of several standards for serious or significant potential to harm human, fish, or animal life, or to be harmful to the environment. There are now 581 chemicals and an additional 30 chemical categories, such as mercury compounds, polycyclic aromatic compounds (PAC's), and Dioxin and Dioxin-like compounds, on the TRI chemical list. Of these chemicals and compounds, 79 were reported by 61 facilities in Delaware for 2010.

WHO MUST REPORT TO THE TRI PROGRAM?

Not every facility in Delaware reports to the TRI program. There are three requirements a facility must meet before reporting is required.

1. Only facilities that have 10 or more full time employees are required to report.

2. A facility must be doing business as a manufacturer or processor, generate electric power, or distribute bulk petroleum products. All federal facilities are also required to report.
3. A facility must manufacture or process one of the chemicals on the TRI list in quantities greater than a minimum threshold value. This value is generally 25,000 pounds for Manufacturing and Processing, and 10,000 pounds for the Otherwise Use category. There are lower threshold values (see Table 2 on page 8) for Bioaccumulative Toxins (PBTs). Some facilities are able to report only non-PBT chemicals on the short Form A if the reportable amount of the chemical meets certain criteria. No amounts are reported on Form A; use of the form indicates that the facility manufactured, processed, or otherwise used less than 1,000,000 pounds, and all releases and waste were less than 500 pounds of the chemical during the year.

HOW DO WE GET THE DATA?

Each year by July 1, facilities report on each chemical that meets the reporting threshold. Each chemical report is usually on a 5-page form that details the type and amount of on-site release, off-site transfer, or on-site waste management activity the chemical has experienced during the prior calendar year. The facilities report this data to DNREC and to the EPA.

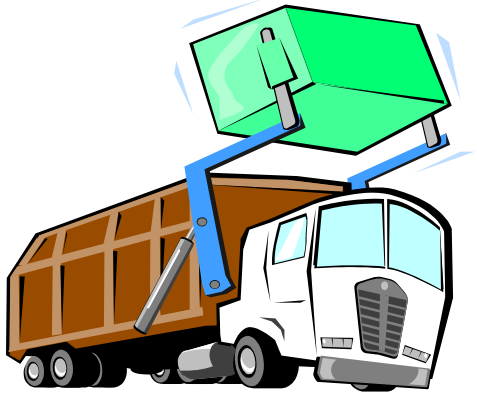
DNREC and EPA check the data for completeness and accuracy, including comparing it with data reported to other programs.

DNREC also visits some of the facilities to get a better understanding about the process at the facility and the reasons for specific chemical use. In addition, DNREC and EPA may audit a facility if they suspect that reporting was not accurate. Both DNREC and the EPA publish reports on the data. TRI data and reports, such as this one, are available to the public.

TYPES OF TRI DATA

TRI chemical data is reported in several categories. Table 1 on the next page lists all the categories and amounts reported to the TRI program in 2010.

On-Site Releases: On-site releases in Delaware are to **air, water,** or **land**. **Releases to air** includes exhaust air collected by vents, ducts, or pipes, as well as air escaping into the general facility atmosphere. **Releases to water** are releases to streams or water bodies, including rivers, lakes, oceans and bays at the facility site. This includes releases from sources such as industrial process outflow or open trenches and storm water runoff. **Releases to land** go to landfills, hazardous waste landfills, surface impoundments (uncovered holding areas used to evaporate and/or settle waste materials), other land disposal such as waste piles or releases, and land application or treatment in which waste containing a TRI chemical is applied to or incorporated into soil or land at the facility.



Off-Site Transfers: Off-site transfers include transfer of chemical waste to **POTW's** (Publicly Owned Wastewater Treatment Plants), to **recycle** operations, to **energy recovery** operations, to **treatment** operations, and to **disposal.** These transfers are to other facilities that are permitted to accept the waste from the facility that generates it.

On-site waste Management:
Waste management operations at the facility generating the waste include **recycling, energy recovery, and treatment.** These are the same as described above in Off-Site Transfers, but occur on-site.

2010 DATA SUMMARY

Table 1 shows statewide totals of 2010 reported TRI on-site releases, off-site transfers, and wastes managed on-site. These different categories are discussed in the previous section and below.

Sixty-one facilities submitted 227 reports on 79 different chemicals. Reports from all Delaware facilities showed an overall reduction in the total amount of state-wide on-site releases by 991,000 pounds (19%) for 2010. These facilities also reported a reduction of 17,905,000 pounds (31%) in on-site waste management amounts, but an increase of 1,761,000 pounds (18%) in transfers off-site for disposal or treatment.

As noted in the Message from the Secretary, on-site releases at the Delaware city refinery were down by 1,164,000 pounds compared to 2009, as refining operations were idle during all of 2010.

ON-SITE RELEASES

On-site releases are emissions to the air, water, or land environment at the facility site. Figure 1 shows the relative amounts of all TRI chemicals released on-site for all Delaware TRI facilities. Releases to air make up the largest portion (81% for 2010) of the total on-site release amount. The percentage released to air increased for 2010 because of decreases in releases to water and land, and increases in releases to air.

TABLE 1

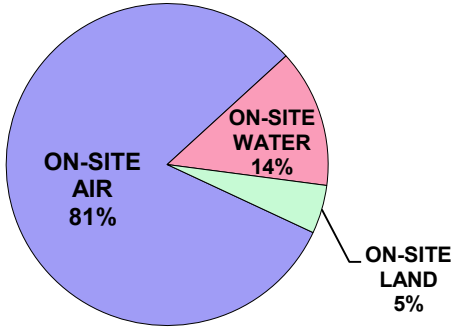
2010 TRI DATA SUMMARY

(IN POUNDS)

	2010
No. of Facilities	61
No of Form As	31
No of Form Rs	196
No. of Chemicals	79
On-site Releases	
Air	3,520,119
Water	600,283
Land	210,747
Total On-Site Releases	4,331,149
Off-Site Transfers	
POTW's	996,970
Recycle	5,469,246
Energy Recovery	1,857,131
Treatment	336,190
Disposal	4,546,552
Total Off-Site Transfers	13,206,088
On-Site Waste Mgmt.	
Recycle	7,678,337
Energy Recovery	0
Treatment	32,895,795
Total On-Site Mgmt.	40,574,132
Total Waste	58,111,368

FIGURE 1

2010 ON SITE RELEASES



TOTAL REPORTED
4,331,149 POUNDS

Of all the TRI chemicals released to air, hydrochloric acid, sulfuric acid, and hydrogen fluoride make up about 82% of the total releases to air. These acid gasses are almost entirely generated by the power plants at Indian River, Edge Moor/Hay Road, and INVISTA

Seaford. These chemicals make up about 60% of the total on-site releases to air, water, and land combined.

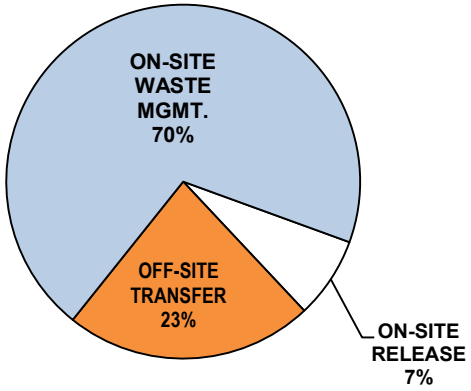
On-site releases to water consist mostly of nitrate compounds from the Premcor and Perdue Georgetown facilities. Although these facilities are large producers of nitrate compounds, there are several other nitrate-producing facilities in Delaware that are not subject to the TRI program.

On-site releases to land are mostly metallic compounds such as barium, vanadium, lead, nickel, manganese, chromium, copper, and zinc compounds. The power plants at Indian River, INVISTA Seaford, and at the Motiva/ Premcor refinery generate most of these compounds from impurities in the fuels that they burn.

TOTAL WASTE

The relative amounts of all TRI chemical wastes from the three main categories in Table 1 are shown in Figure 2, where you can see the percentage contribution of the on-site releases, off-site transfers, and on-site waste management.

FIGURE 2
2010 TOTAL TRI WASTE



TOTAL REPORTED:
58,111,368 POUNDS

Table 1 and Figure 2 show that on-site releases make up only about 7% of the total TRI waste. Other data, including transfers off-site and waste managed on-site are discussed in more detail in the *2010 TRI Data Detail Report* available from DNREC.

LIMITATIONS OF TRI DATA

In addition to the fact that not all facilities in Delaware are required to report to the TRI program, there is an important thing to keep in mind:

THIS DATA DOES NOT INDICATE THE AMOUNT, IF ANY, OF HUMAN EXPOSURE OR HOW SEVERE IT MIGHT BE.

TRI data does not provide an indication of actual or potential exposure to the reported releases and cannot be used by itself to determine the impact on your health. Other factors such as the chemical's release rate, the toxicity of the chemical, where the chemical enters the environment, the direction of its path, and its proximity to nearby communities must be fully considered when assessing exposure to the chemical. For example, a small release to air of a highly toxic chemical near a community may be a greater risk than a large release to land of a less toxic chemical in a remote area.

PERSISTENT, BIOACCUMULATIVE TOXIC CHEMICALS

In 2000, the EPA required reporting at much lower threshold levels on a class of chemicals known as persistent, bioaccumulative, toxics (PBTs). Table 2 shows the new thresholds. In 2001, lead and lead compounds, already on the TRI chemical list, were added to the PBT list, and their reporting thresholds were also reduced.

PBTs are receiving increased attention because we are learning that these chemicals are more toxic to humans, animals, and the environment than others. They remain in the environment for a long time and may not be readily destroyed by nature. PBTs may also move up the food chain and accumulate in bodies of humans, fish, and animals rather than being destroyed or eliminated.

If these PBT chemicals are manufactured, processed, or otherwise used above the reporting threshold amounts shown in Table 2, rather than the amounts on page 4, they are reportable to the TRI program. Because of the increased hazards associated with these substances, the thresholds for reporting PBTs to TRI are much lower than the basic thresholds applied to other, non-PBT substances. The total amounts released on-site for these PBT substances are shown in Table 3 on the next page.

TABLE 2
2010 PBT CHEMICALS AND REPORTING THRESHOLDS
(pounds/year)

Chemical or Chemical Category	Threshold (Pounds)	2010 REPORTS
Aldrin	100	0
Benzo[g,h,l]perylene	10	7
Chlorodane	10	0
Dioxin and dioxin-like compounds category	0.1 grams	5
Heptachlor	10	0
Hexachlorobenzene	10	1
Isodrin	10	0
Lead *	100	4
Lead and lead compounds *	100	11
Mercury	10	2
Mercury compounds	10	5
Methoxychlor	100	0
Octachlorostyrene	10	1
Pendimethalin	100	0
Pentachlorobenzene	10	1
Polychlorinated biphenyls (PCBs)	10	1
Polycyclic aromatic compounds category	100	11
Tetrabromobisphenol A	100	0
Toxaphene	10	0
Trifluralin	100	0
	TOTAL	49

Table 3 shows the reported on-site release amounts for PBTs for 2005-2010. The PBT chemicals made up a small part, about 0.21%, of the

total TRI on-site releases for 2010. Lead and lead compounds make up a large portion, 7,872 pounds, or 88%, of PBT on-site releases for 2010. Releases from coal-burning operations at power generating facilities accounted for 6,967 pounds, or 89%, of this amount. However, the 2010 reported on-site releases of PBTs are 11,163 pounds (55%) lower compared to 2009 because of a large reduction (11,239 pounds) in the amount of lead compounds released mostly to land from coal-burning power plants.

TABLE 3
2005-2010 TRI PBT DATA SUMMARY
(IN POUNDS)

	2005	2006	2007	2008	2009	2010
No. of Facilities	28	26	30	27	25	26
No. of Form A	NA	6	4	NA	NA	NA
No. of Form R	60	54	59	60	54	49
No. of Chemicals	11	11	11	11	11	11
On-site Releases						
Air	4,095	4,075	4,172	3,716	1,568	1,768
Water	1,857	1,405	1,565	1,008	492	1,143
Land	26,559	25,309	15,270	28,948	18,052	6,039
Total On-Site Releases	32,511	30,789	21,008	33,673	20,112	8,949

Other PBT chemicals had smaller increases or decreases.

Evraz Claymont steel had the largest PBT release to air, 423 pounds. The Calpine Edge Moor energy center had the largest PBT release to water, 1,039 pounds and the Indian River Power Plant had the largest PBT release to land, 5,347 pounds. All releases were lead compounds.

Over 96% of the PBT amount transferred off-site for recycle was lead compounds from Johnson Controls. The Delaware City Refinery reported almost the entire amount of on-site PBT chemical waste management with 111 pounds of benzo(g,h,i) perylene and 91 pounds of polycyclic aromatic compounds being treated on-site.

DIOXINS

Chemicals vary in toxicity, and dioxins are the most highly toxic class of PBTs. Because of their high toxicity, dioxins are reported in grams rather than pounds under TRI. One gram equals 0.0022 pounds. The dioxin trend for Delaware is shown in Figure 3 on the next page. The DuPont Edge Moor facility made a major process change and reduction in on-site releases starting in 2003; its reported 2002 on-site release was 13.85 grams (and higher for previous years) but its 2010 amount was only 0.548 grams.

Evraz Claymont Steel, the top reporter in Delaware for on-site release of dioxins for 2010, began dioxin reporting starting in 2006 with 7.13 grams, but that amount fell to 6.282 grams, or 0.01385 pounds, for 2010. Table 4 shows the amounts reported released on-site by the facilities that reported on dioxins. The total amount reported for 2010 was 8.88 grams, down from the 18.03 grams reported for 2002.

Beginning with reporting year 2008, additional information on toxicity became available to TRI for dioxin and dioxin-like compounds (DLCs). The 17 compounds that fall under the category of DLCs reportable to TRI have a wide range of toxicity; the toxicity value is called the Toxic Equivalent Factor (TEF). In order to compare the releases on an equal toxicity basis, we multiply the TEF of each dioxin by the weight reported to get the Toxic Equivalent Quantity (TEQ). The rank of facilities may change when comparing weight or TEQ amounts.

Please see the 2010 TRI Detail Report for a more technical discussion of TEQ. The discussion includes comparisons based on weight and TEQ amounts for each facility reporting dioxins.

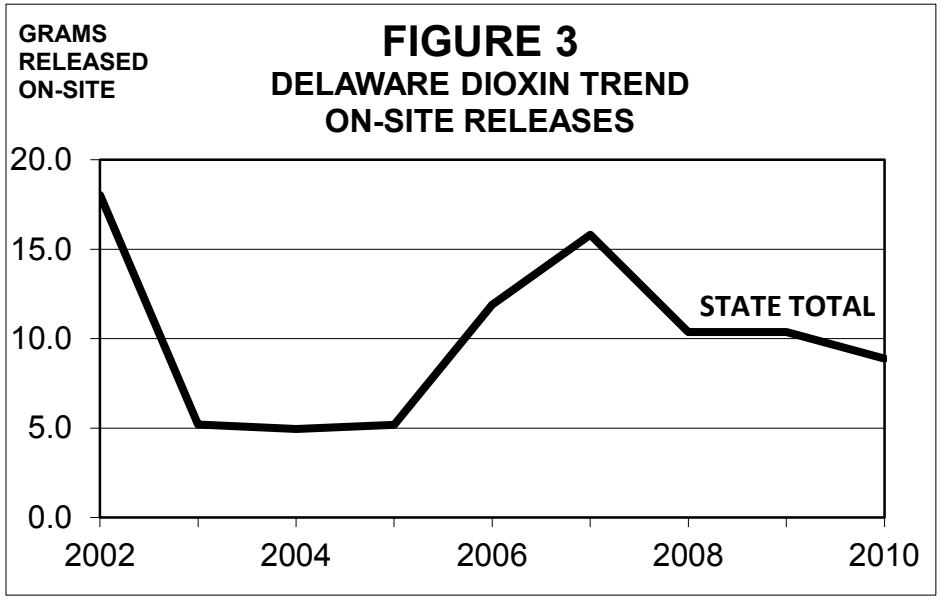


TABLE 4
FACILITIES SORTED BY DIOXIN ON-SITE RELEASE

FACILITY	TOTAL ON-SITE GMS. RELEASE	ON-SITE GMS. RANK
EVRAZ CLAYMONT STEEL	6.282194	1
EDGE MOOR/HAY ROAD POWER PLANTS	1.831501	2
DUPONT EDGE MOOR	0.548005	3
INDIAN RIVER POWER PLANT	0.210003	4
FORMOSA PLASTICS	0.005035	5
TOTAL	8.871703	

Mercury and Mercury Compounds

Mercury (elemental mercury) and mercury compounds are an important part of the PBT category, and this section discusses some of the data. Control of mercury and mercury compounds is becoming increasingly important as we learn more about the serious side effects of mercury.

Figure 4 shows the trend since 2000. Total reported on-site releases of mercury in Delaware have decreased by 89% since the peak of 1,738 pounds in 2002. Reported mercury and mercury compound total on-site release amounts decreased by 60 pounds (24%) compared to 2009. The Delaware city Refinery led the decline with a reduction of 26 pounds, followed by the Indian River Power plant with 17 pounds, and INVISTA Seaford with 13 pounds. Most of the reductions, 37 pounds, were in releases to land. The reasons for the reductions are a combination of reduced mercury content of coal and better pollution controls.

FIGURE 4
DELAWARE MERCURY TRENDS
ON-SITE RELEASE, ALL FACILITIES

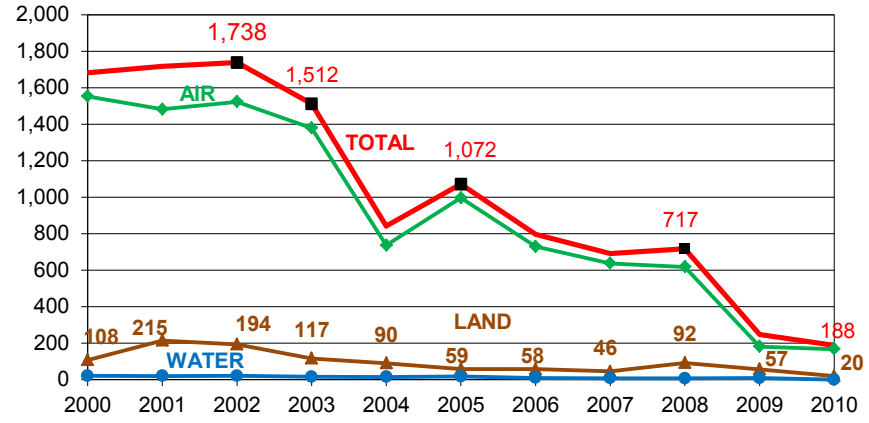
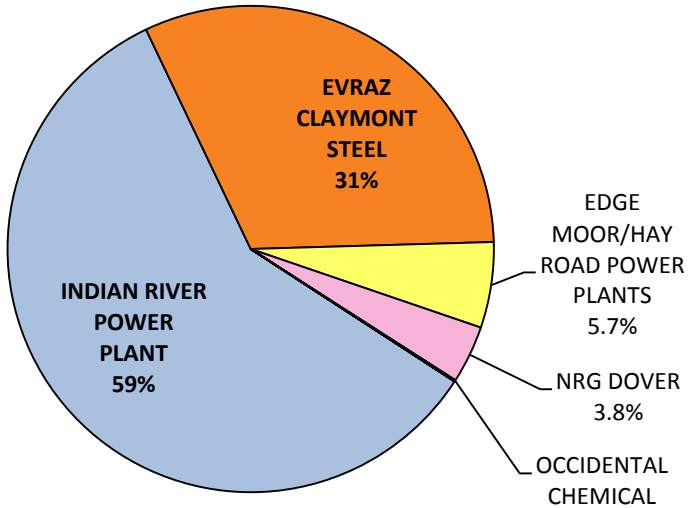


Figure 5 shows the percentage that each of the facilities that reported a mercury or mercury compound contributed to the mercury on-site release for 2010. Intervet and Dentsply were required to report on mercury because of activities at the facility involving mercury, but these facilities did not report any on-site releases of mercury.

FIGURE 5
2010 ON-SITE MERCURY RELEASES
FROM DELAWARE FACILITIES



188 POUNDS REPORTED RELEASED ON-SITE

CARCINOGENIC CHEMICALS

Some chemicals are known to or suspected to cause cancer in humans. These chemicals are called carcinogens. Table 5 shows the chemicals on the TRI list that are identified as carcinogens and were reported in Delaware for 2010. Table 5 also shows the number of reports that were received by Delaware for each of these chemicals (six less than for 2009).

DATA FOR CARCINOGENIC CHEMICALS

Table 6 shows data for carcinogens reported to TRI in Delaware since 2004. The trend has been generally down because of reductions reported since 2009, such as the chromium compounds released to land (-17,775 pounds), from the Indian River Power Plant, and benzene released to air (-9,430 pounds) from the Delaware City Refinery. Additional detail can be found in the longer, more technical *2010 TRI Data Detail Report* available from DNREC. The amount of carcinogens released on-site in 2010 has decreased by 13% compared to the amount released in 2009 and has decreased 65% since 2004.

TABLE 6

2004-2010 TRI CARCINOGENS

ON-SITE RELEASES IN POUNDS

	2004	2005	2006	2007	2008	2009	2010
AIR	223,522	226,188	187,836	145,637	161,821	128,593	142,209
WATER	12,129	8,062	6,770	8,094	5,627	2,586	1,755
LAND	222,680	178,694	187,366	78,238	140,976	51,417	14,862
TOTAL ON-SITE	458,331	412,943	381,972	231,970	308,424	182,596	158,826

TABLE 5

CARCINOGENS REPORTED BY DELAWARE FACILITIES FOR 2010

CHEMICAL NAME	IARC	NO. OF REPORTS
ARSENIC COMPOUNDS	1	3
BENZENE	1	3
CHROMIUM COMPOUNDS	1	4
ETHYLENE OXIDE	1	1
NICKEL COMPOUNDS	1	2
VINYL CHLORIDE	1	1
1,3-BUTADIENE	2A	0
4,4'-METHYLENEBIS(2-CHLOROANILINE)	2A	2
CREOSOTE	2A	0
POLYCHLORINATED BIPHENYLS	2A	1
TRICHLOROETHYLENE	2A	1
POLYCYCLIC AROMATIC COMPOUNDS*	2A,2B	11
COBALT COMPOUNDS	2A	1
DICHLOROMETHANE	2B	1
ETHYL ACRYLATE	2B	1
ETHYLBENZENE	2B	3
HEXACHLOROBENZENE	2B	1
LEAD	2B	4
LEAD COMPOUNDS	2B	11
NAPHTHALENE	2B	6
NICKEL	2B	3
NITROBENZENE	2B	1
P-CHLOROANILINE	2B	1
PROPYLENE OXIDE	2B	1
STYRENE	2B	2
TETRACHLOROETHYLENE	2B	1
TOLUENE DIISOCYANATE (MIXED ISOMERS	2B	3
VINYL ACETATE	2B	1
	TOTAL =	70

Source: 2010 DNREC TRI Database, October 2011

* Polycyclic aromatic compounds is a class that has chemicals with both 2A and 2B classifications.

FIGURE 6

2010 ON-SITE RELEASES BY COUNTY

NEW CASTLE

Releases to Air = 796,657 Pounds
Releases to Water = 414,447 Pounds
Releases to Land = 12,355 Pounds
Total On-Site Releases = 1,223,459 Pounds
133 Reports, 30 Facilities
28.2% of Statewide Releases

KENT

Releases to Air = 146,670 Pounds
Releases to Water = 0 Pounds
Releases to Land = 0 Pounds
Total On-Site Releases = 146,670 Pounds
28 Reports, 12 Facilities
3.4% of Statewide Releases

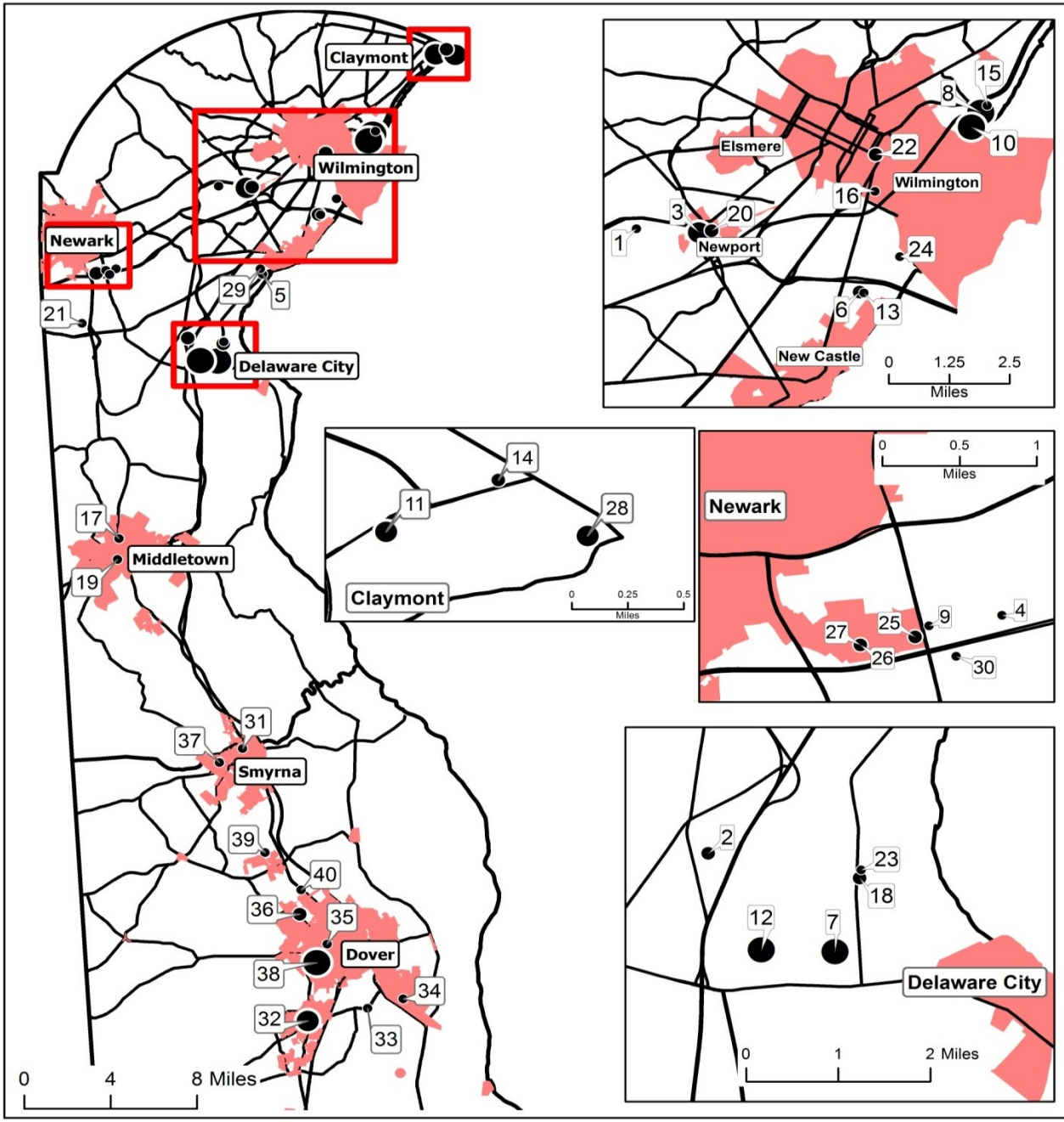
SUSSEX

Releases to Air = 2,576,792 Pounds
Releases to Water = 185,836 Pounds
Releases to Land = 198,392 Pounds
Total On-Site Releases = 2,562,668 Pounds
66 Reports, 19 Facilities
68.4% of Statewide Releases

Figure 6 on this page summarizes data about the TRI releases in 2010 for each county, and the maps and indexes on the next 2 pages show where TRI facilities are located.

Source: DNREC 2010 TRI Database, 10-1-11

FIGURE 7 - TRI FACILITY LOCATOR MAP 2010



MAP ID	FACILITY
	NEW CASTLE COUNTY
1	AGILENT TECHNOLOGIES NEWPORT
2	ARLON
3	BASF NEWPORT
4	CHROME DEPOSIT
5	COLOR WORKS PAINTING
6	CRODA
7	DELAWARE CITY REFINERY
8	DUPONT EDGE MOOR
9	E A R
10	EDGE MOOR/HAY ROAD POWER PLANTS
11	EVRAZ CLAYMONT STEEL
12	FORMOSA PLASTICS
13	FUJIFILM
14	HONEYWELL
15	IKO
16	INSTEEL WIRE
17	JOHNSON CONTROLS
18	KUEHNE
19	MACDERMID
20	MEDAL
21	MOTECH AMERICAS
22	NORAMCO
23	OCCIDENTAL CHEMICAL
24	PRINCE MINERALS
25	ROHM & HAAS B2 B3 B8
26	ROHM & HAAS B5 B6
27	ROHM & HAAS B7 B15
28	SUNOCO
29	V&S DELAWARE GALVANIZING
30	VP RACING FUELS
	NEW CASTLE COUNTY
31	BUCK ALGONQUIN
	KENT COUNTY
32	CAMDEL METALS
33	CARL KING
34	DOVER AFB
35	HANESBRANDS
36	HIRSH INDUSTRIES
37	METAL MASTERS
38	NRG ENERGY DOVER
39	PPG DOVER
40	SERVICE ENERGY DOVER

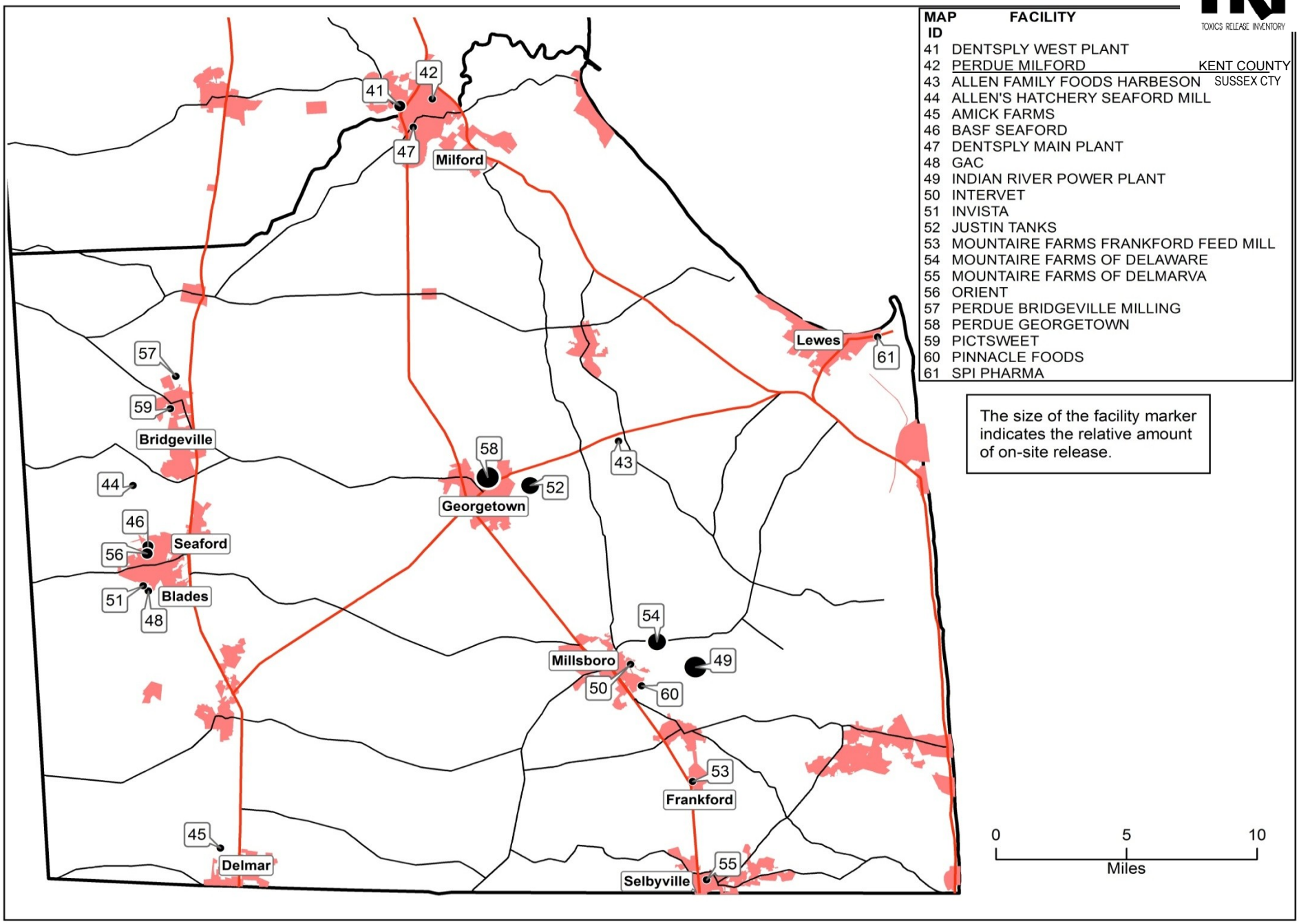
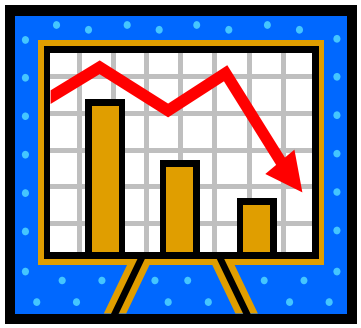


FIGURE 7 - TRI FACILITY LOCATOR MAP 2010

TRENDS OVER TIME



In addition to the reported releases for the latest year, DNREC also looks at how the releases change over time. If a type of release is trending up or down, we will look for reasons why. It may be because a group of chemicals, such as PBTs or carcinogens, had a change in reporting requirements, or the economy changed demand for products that a facility produces. Whatever the reason, we look at trends as long-term indicators for the way activity is changing. We also look at trends for potential issues that need investigation.

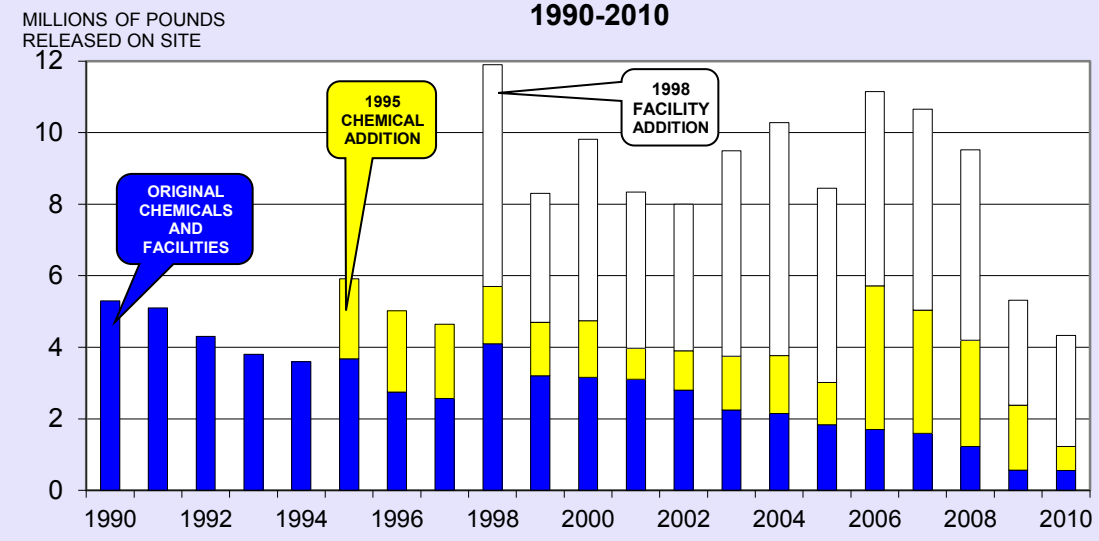
The EPA also adds chemicals and facilities to the TRI program when it discovers chemicals that are significant toxics or that some facilities as a group tend to manufacture or use toxic chemicals. Figure 8 shows the trend of the on-site releases since 1990, and also shows the result of adding chemicals and facilities and industry efforts to reduce releases. Usually a few chemicals are added or deleted every year and they are included in the totals for that year.

Since 1990, on-site releases of the original chemicals from the original facilities in the TRI program list have trended down over time and are now 89% (4.7 million pounds) lower than the original amount reported.

In 1995, a large group of chemicals was added increasing the total number of chemicals increased to 667 from the 365 reportable in 1994. This group has trended down 70% since it was added in 1995.

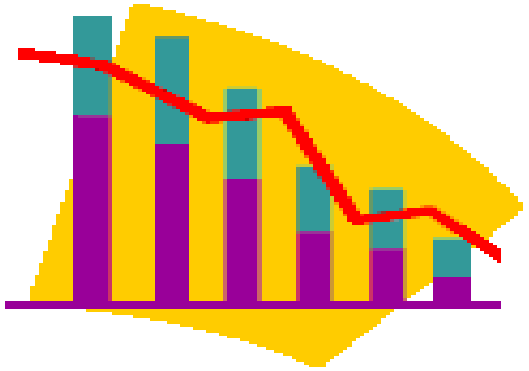
In 1998, a group of facilities was added. This group included electric generating facilities, as well as some chemical and

FIGURE 8
EFFECT OF CHEMICAL AND FACILITY GROUP ADDITIONS
1990-2010



Source: DNREC 2010 TRI Database, 10-1-11

petroleum distribution facilities. The Indian River Power Plant and the Edge Moor/Hay Road Power Plants are significant facilities in this group. Because



the electric generating facilities are starting to implement parts of the new Delaware Electric Generating Unit Multi-Pollutant Regulation, the 1998 Facility Addition group is now 50% (3,100,000 pounds) lower than its original reported amount for 1998.

Because the refining operations at the Delaware City Refinery were idle during 2010, the amounts reported by this facility for 2010 were significantly lower compared to its 2009 amount (1.2 million pounds) and its 1998 amount (1.5 million pounds).

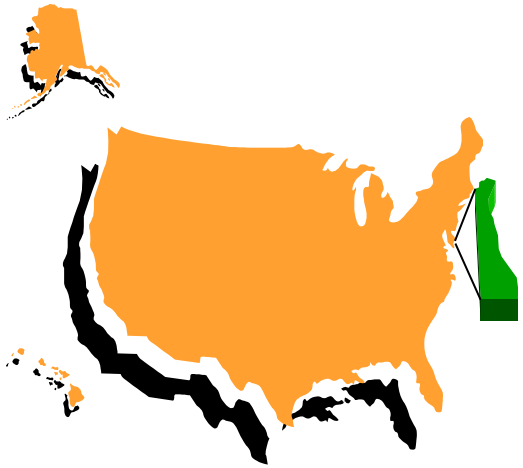
The amounts of on-site releases for the three groups are all lower than their original amounts, and the total for all three groups is lower than the original amount reported in 1990. If each group had remained constant at its original reported amount, the amounts reported for 2010 would be 13.73 million pounds instead of the 4.33 million pounds reported; a reduction of 9.4 million pounds, or 68%. We hope that this downward trend will continue.

TRI, Pollution Control, and the Economy

The declining economy in Delaware over the last two years has influenced many facilities. Some of the changes noted in this report were the result of routine changes within the facilities, but some were the result of facility closings. Other facilities had reductions in production, and as a result, had lower releases. The Production Index (PI) that is reported along with TRI release and waste management data is one way to estimate the impact of the economy, because the PI is the level of production associated with the chemical being reported.

For the top 15 facilities, the average PI was 88% of the 2009 value. Of the total reduction in on-site releases of 921,000 pounds for these facilities, the amount of reduction in on-site release predicted by the PI was 1.13 million pounds. This represents the effect of the economy. The difference between the predicted amount and the actual 2010 amount was a gap of -211,000 pounds. This gap represents the effect of pollution controls for these top 15 facilities. Factors such as the quality of coal also may have increased release amounts at some facilities. There were also some cases where facilities showed releases less than expected. For example, the DuPont Edge Moor facility reported a PI of 1.25 (125%) while on-site releases increased only 8%, and the Calpine Edge Moor/Hay Road Power Plant reported a PI of 1.61 yet had a reduction in on-site releases of 50% because of their conversion to natural gas.

NATIONAL PERSPECTIVE



It may be helpful to see how Delaware compares to other states and to the nation.

At the time of this report, the EPA had released its national 2010 TRI data, so we compared our 2010 data with the national 2010 data. Following are some highlights from this comparison:

1. Delaware ranks 44th in the nation for total on-site releases.

2. Ninety-four facilities in the nation each individually released more on-site than all the facilities in the State of Delaware combined.

3. Delaware released 0.12% of the total on-site release amounts in the nation.

4. Some reports from nearby facilities in neighboring states exceed the amounts for all Delaware reports for a specific chemical. For example, one facility in Pennsylvania released 621,800 pounds of toluene to air. The Delaware total for all facilities was 4,497 pounds. Another facility in Maryland released 251,000 pounds of hexane to air. The Delaware total for hexane was 20,059 pounds.

Some facilities in Delaware do rank at or near the top of the national rankings for specific releases.

DuPont Edge Moor ranks #9 in the nation for off-site disposal of dioxin and dioxin-like compounds and #12 for on-site release of carbonyl sulfide.

DuPont Edge Moor ranks #4 for off-site disposal of chromium compounds, #4 for off-site to disposal of vanadium compounds, and #1 for off-site disposal of manganese compounds.

Evraz Claymont Steel ranks #67 for on-site release of dioxins.

Formosa Plastics ranks #2 in the nation for on-site release of vinyl chloride and #10 in the nation for on-site release of vinyl acetate.

The **Indian River Power Plant** ranks #15 for on-site release of hydrochloric acid.

Delaware ranks #44 within the states for on-site release of mercury and mercury compounds for 2010.

No Delaware facility ranked in the top 100 facilities for on-site release of mercury.

Mountaire Farms of Delaware ranks #5 for ammonia release for treatment on on-site land.

The Dover Air force Base ranked #41 within all 80 U.S. Air Force bases for total on-site releases.

These rankings may change if revised data is received, and the new data may be greater than or less than this data for a specific chemical or facility comparison.

OTHER SOURCES OF INFORMATION

Information about TRI and related programs is available from several additional sources. Some of these sources are shown below. Other sources can be found in our DNREC *2010 TRI Data Detail Report.*

Scan this image with your smart phone to access DNREC TRI data and reports.

Access to the DNREC TRI Files - DNREC is responsible for collecting, processing, and distributing information submitted by Delaware facilities under the TRI program. The 1998-2010 TRI annual reports may be viewed through the DNREC link at: http://www.dnrec.delaware.gov/SERC/Pages/Reports.aspx. Additional details and information not in the reports are available to the public through the EPCRA Reporting Program located within DNREC. A searchable database is at:

http://www.serc.delaware.gov/services/search/index.shtml.

Toxics Release Inventory National analysis - EPA's annual TRI report. It covers information nationwide and provides a good perspective on how Delaware and the companies in Delaware compare to other states http://www.epa.gov/tri/tridata/tri09/nationalanalysis/index.htm

The 2010 edition of this report will be available later this year and will also be available at the DNREC office at 655 S. Bay Rd. in Dover.

Delaware's Department of Natural Resources and Environmental Control has publications, reports, and information available for a wide variety of programs at: http://www.dnrec.delaware.gov/info/pages/ELibrary.aspx. In addition to TRI reports, there are other provisions of the Emergency Planning and Community Right to Know Act (EPCRA) that provide information to the public and to local emergency planning and response organizations. For additional information, visit the Delaware EPCRA website at: http://www.serc.delaware.gov/epcra.shtml.

EPA's TRI Home Page – The EPA TRI home page provides information on the many facets of the TRI program at EPA, including an Executive Summary, Q&A's, a link now to the 2008 TRI data, and later this year to the 2010 data, a current list of reportable chemicals, reporting forms, state and federal program contacts, and various guidance documents available for downloading. This website has many links to other EPA and non-EPA sites associated with TRI. www.epa.gov/tri/.

Right-to-know Network - Searchable nationwide TRI data is available through RTKNet. The RTKNet was established by two non-profit organizations to provide access to TRI and chemical data, link TRI with other environmental data, and exchange information among public interest groups. www.rtknet.org.

Delaware Public Health Cancer Rates and Causes – This site provides data and answers to many cancer-related questions. http://dhss.delaware.gov/dhss/dph/dpc/cancer.html

OTHER SOURCES OF INFORMATION

Chemical Data Fact Sheets - A two-page fact sheet is available for most TRI chemicals reported in Delaware and contains information on chemical characteristics, health hazards, and ecological effects. The two-page fact sheets (ToxFAQs) are available upon request from DNREC's TRI program or available through the Agency for Toxic Substances and Disease Registry at: http://www.atsdr.cdc.gov/toxfaqs/index.asp

Envirofacts Electronic Warehouse - Envirofacts is an EPA-developed website that provides public access to multiple environmental databases, including TRI. Links are available to data about hazardous waste, water permits, drinking water, Superfund sites, air, water, toxics, and more. On-line queries allow the user to retrieve data and create reports, as well as generate maps: www.epa.gov/enviro.

Delaware Air Quality Report - The annual air quality report is prepared by the Air Surveillance Branch in the Air Quality Management Section of DNREC. This report presents data gathered from a statewide network of air monitoring stations, and includes analyses, trends, and other information regarding Delaware's air quality. For a copy of the report, or for more information, please call (302) 323-4542. This report is available on-line at: http://www.awm.delaware.gov/AQM/Pages/AQMPublicationsandReports.aspx and air toxics information is at: http://www.awm.delaware.gov/AQM/Pages/DATAS1.aspx.

The EPA site for additional air quality information is: http://www.epa.gov/oar/oaqps/publicat.html.

The Office of Pollution Prevention & Toxics (OPPT) - http://www.epa.gov/oppt/index.htm is a part of the EPA that:

- Promotes pollution prevention as the guiding principle for controlling industrial pollution;
- Promotes safer chemicals through a combination of regulatory and voluntary efforts;
- Promotes risk reduction so as to minimize exposure to existing substances such as lead, asbestos, dioxin, and polychlorinated biphenyls; and,
- Promotes public understanding of risks by providing understandable, accessible and complete information on chemical risks to the broadest audience possible.

Risk-Screening Environmental Indicators (RSEI) - This model was developed by EPA's Office of Pollution Prevention & Toxics as a risk-screening tool that provides a relative comparison of TRI releases. This application is available on CD-ROM or through the Internet at: http://www.epa.gov/oppt/rsei/.

Questions or Comments About This Report – Please direct your comments, questions, or requests to the TRI COORDINATOR at the location on the back cover of this report.

Delaware
Toxics Release Inventory

Delaware Department of Natural Resources and Environmental Control

Emergency Planning and Community Right to Know Program
655 South Bay Road, Suite 5N
Dover, Delaware 19901
302-739-9405

The Department of Natural Resources and Environmental Control is committed to affirmative action, equal opportunity, and the diversity of its workforce.

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